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Jensen et al.

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- (54) **STOW-IN-FLOOR SEAT ASSEMBLY WITH PITCHED EASY ENTRY POSITION**
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B60N 2/874 (2018.01)
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- (52) **U.S. Cl.**
CPC **B60N 2/3075** (2013.01); **B60N 2/22** (2013.01); **B60N 2/309** (2013.01); **B60N 2/3011** (2013.01);
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See application file for complete search history.

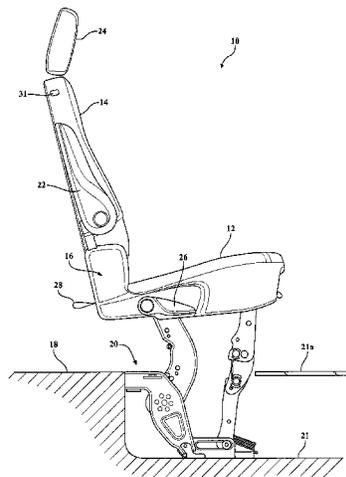
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- (57) **ABSTRACT**
A seat is provided in which a seat cushion is pivotally coupled to a seat back by a recliner assembly. The recliner assembly is selectively operable between a locked condition preventing pivotal movement of the seat back and an unlocked condition allowing pivotal movement of the seat back. A riser assembly supports the seat assembly above a floor, such as the floor of a vehicle, and is configured for actuation and movement of the seat assembly between a generally upright seating position, a pitched easy entry position tilted forwardly and downwardly towards the floor to allow easier ingress and egress behind the seat, and a stowed position recessed within a compartment below the floor.

13 Claims, 19 Drawing Sheets



Related U.S. Application Data

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 - B60N 2/22* (2006.01)
- (52) **U.S. Cl.**
 - CPC *B60N 2/3065* (2013.01); *B60N 2/3072* (2013.01); *B60N 2/3079* (2013.01); *B60N 2/856* (2018.02); *B60N 2/874* (2018.02)

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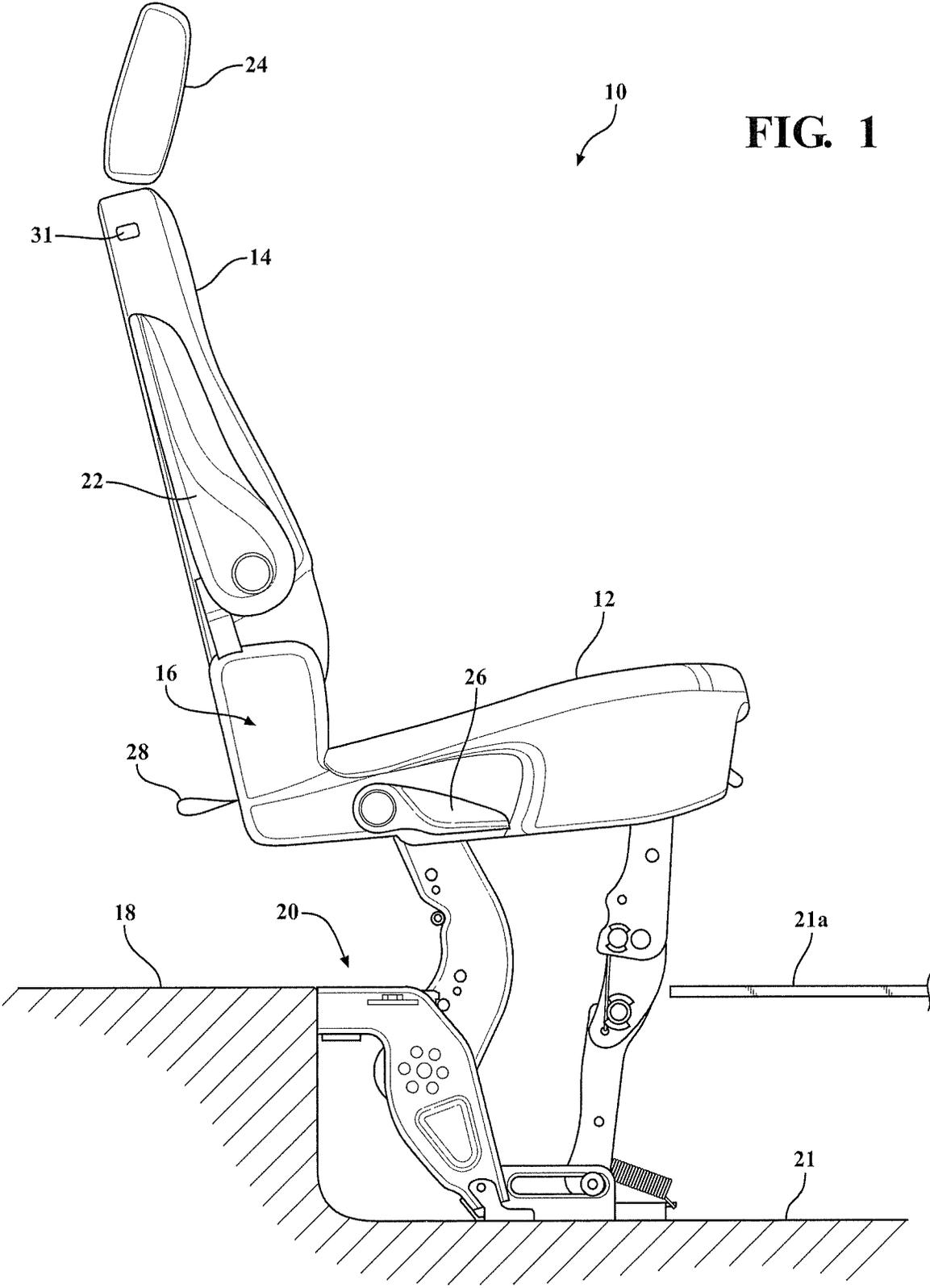
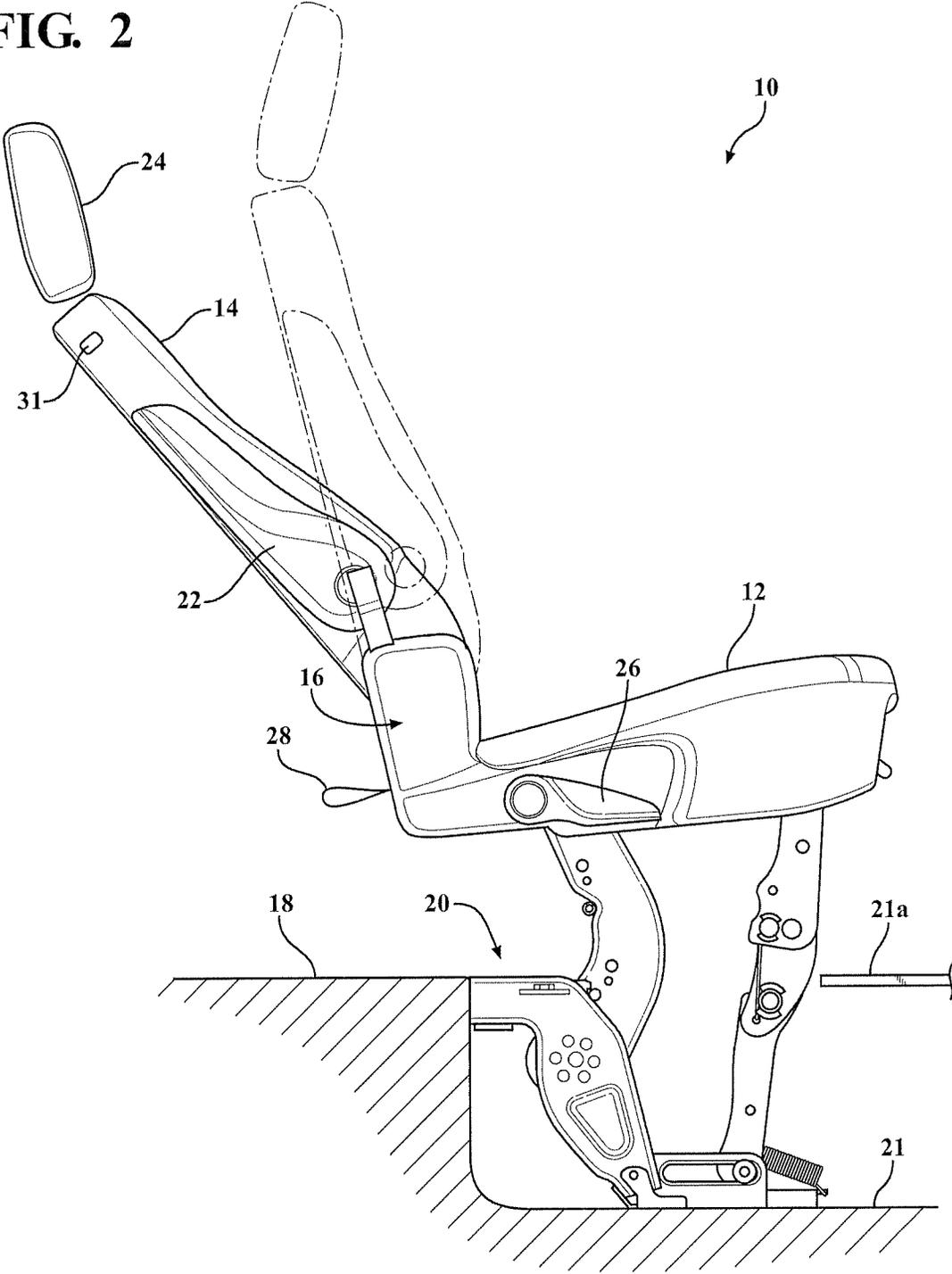


FIG. 1

FIG. 2



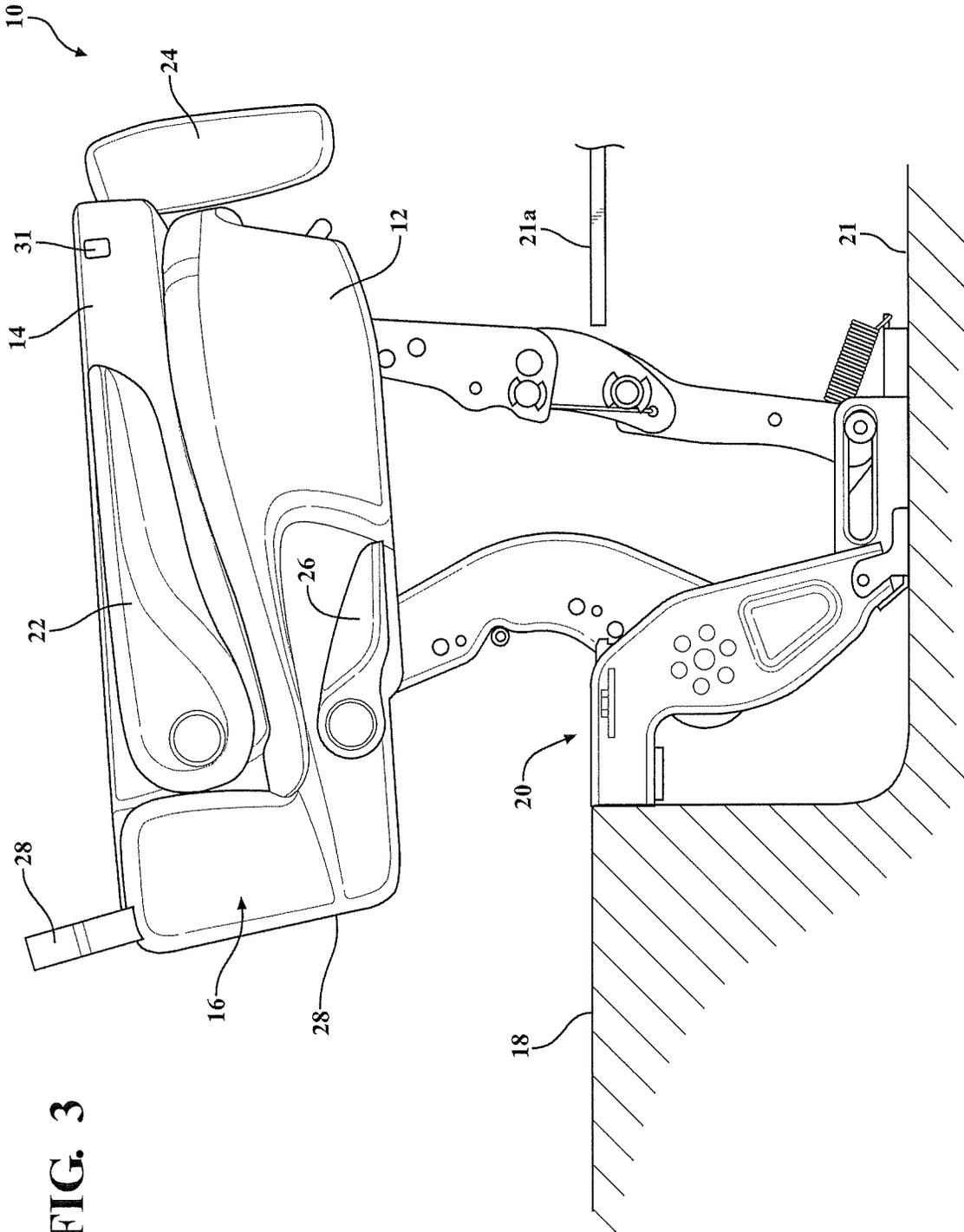


FIG. 3

FIG. 4A

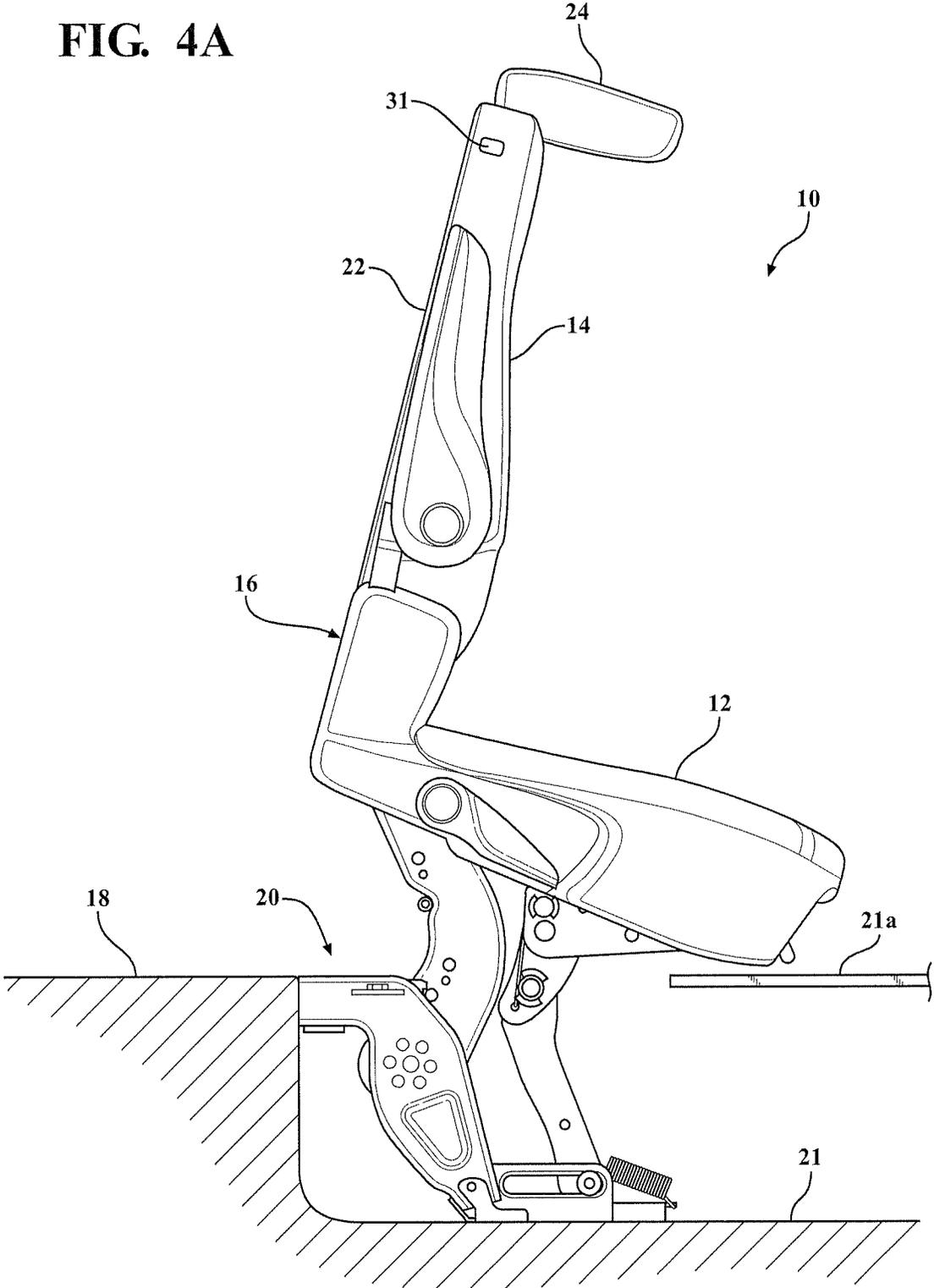


FIG. 4B

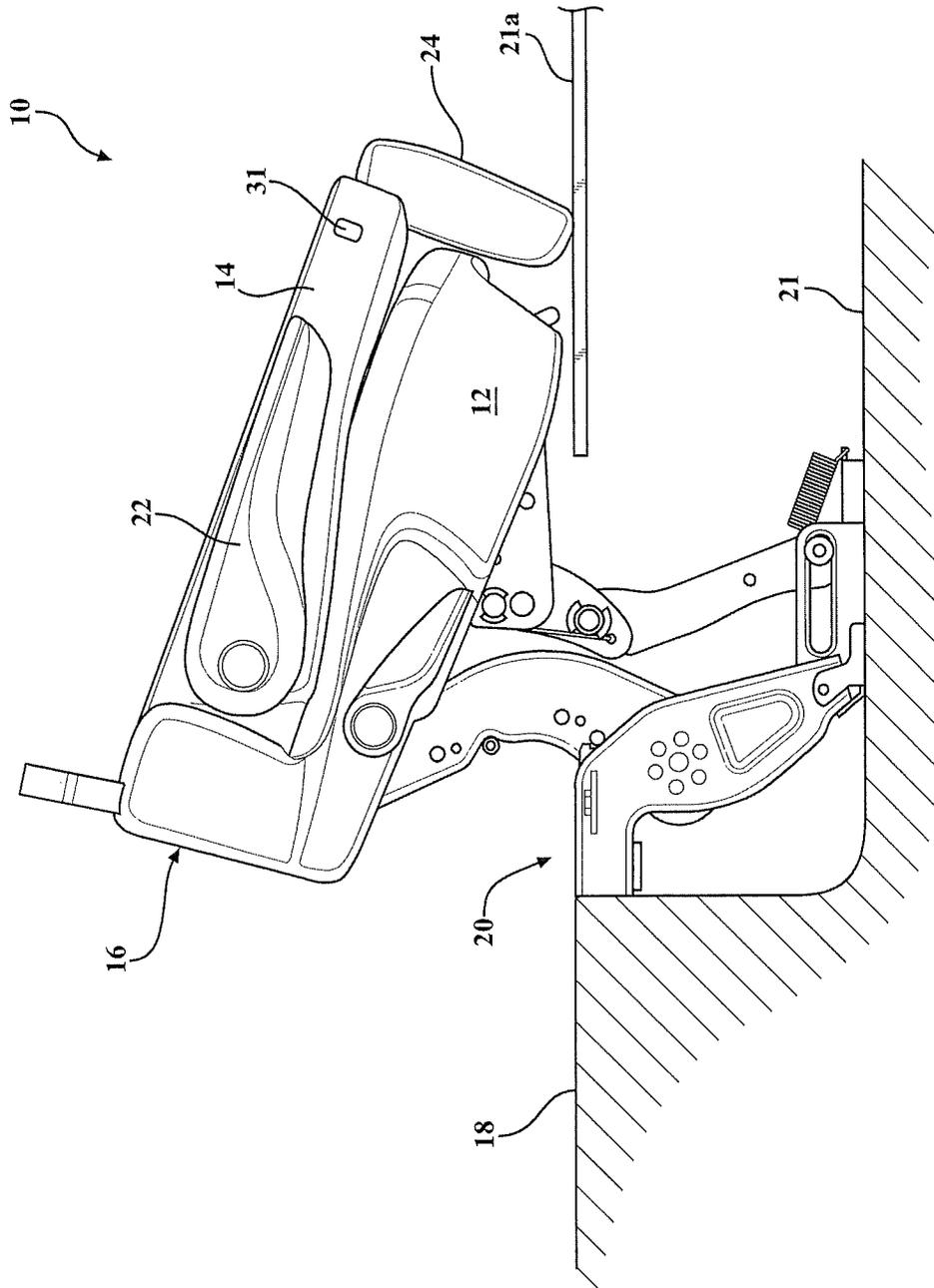


FIG. 5

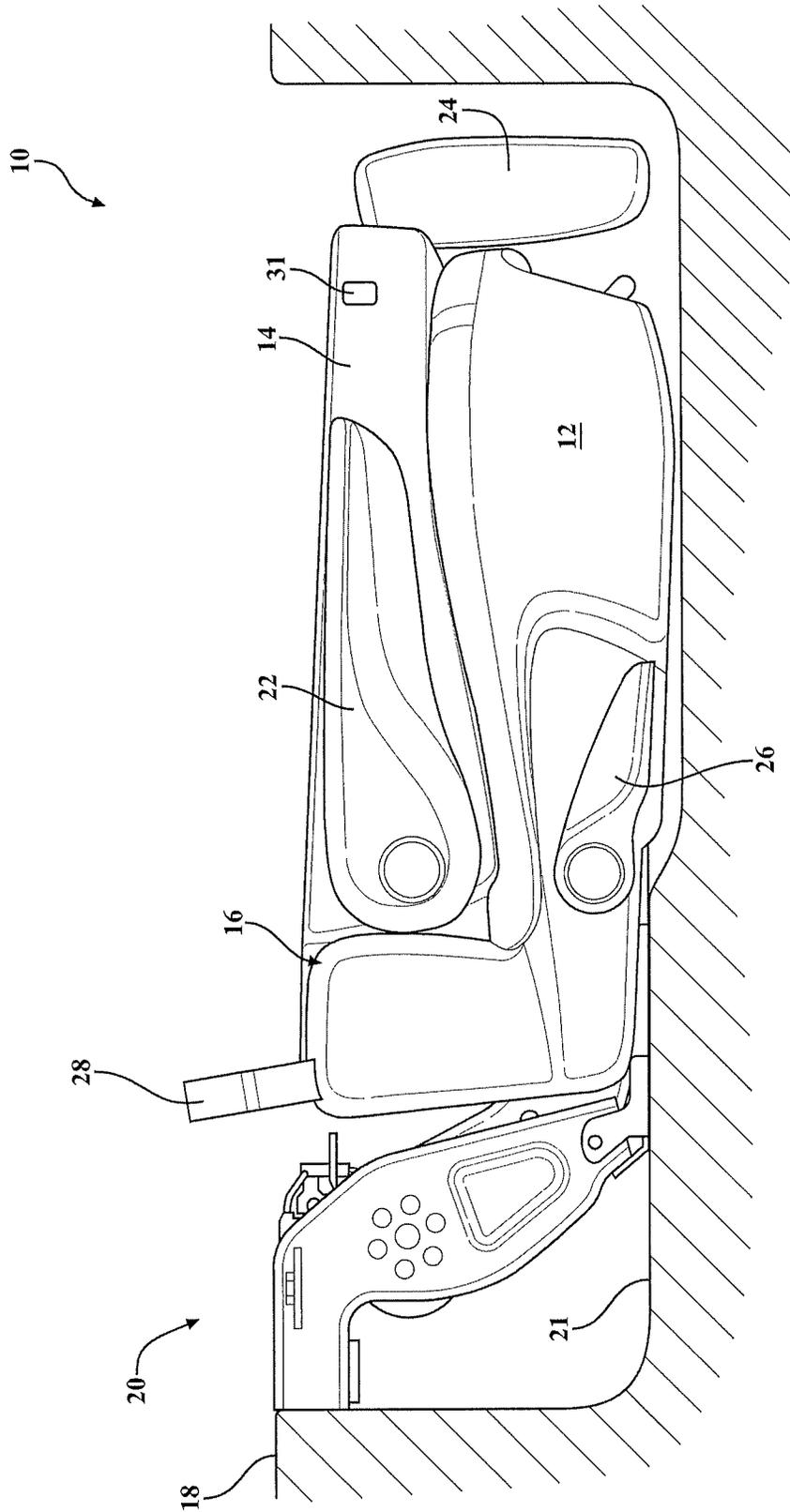
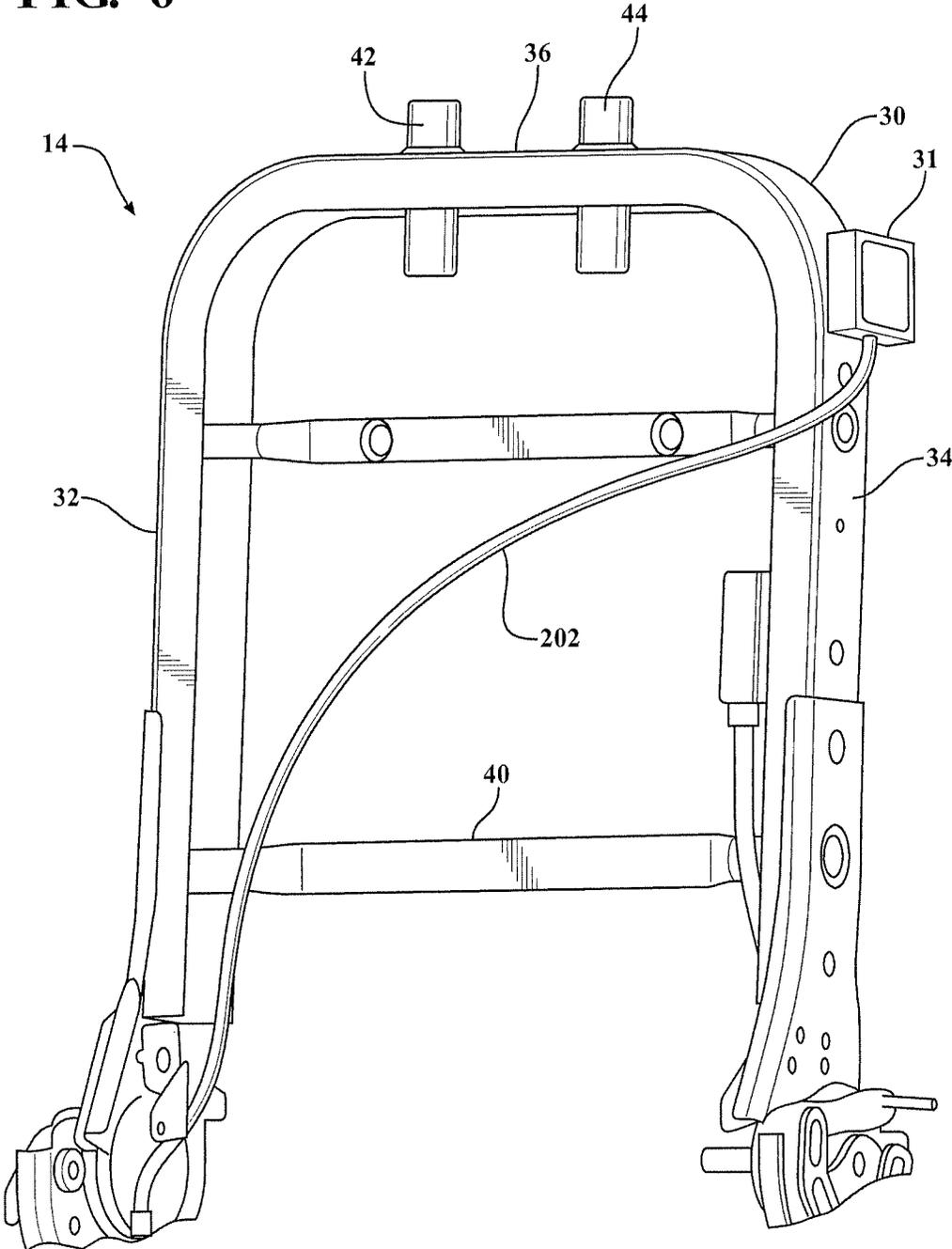


FIG. 6



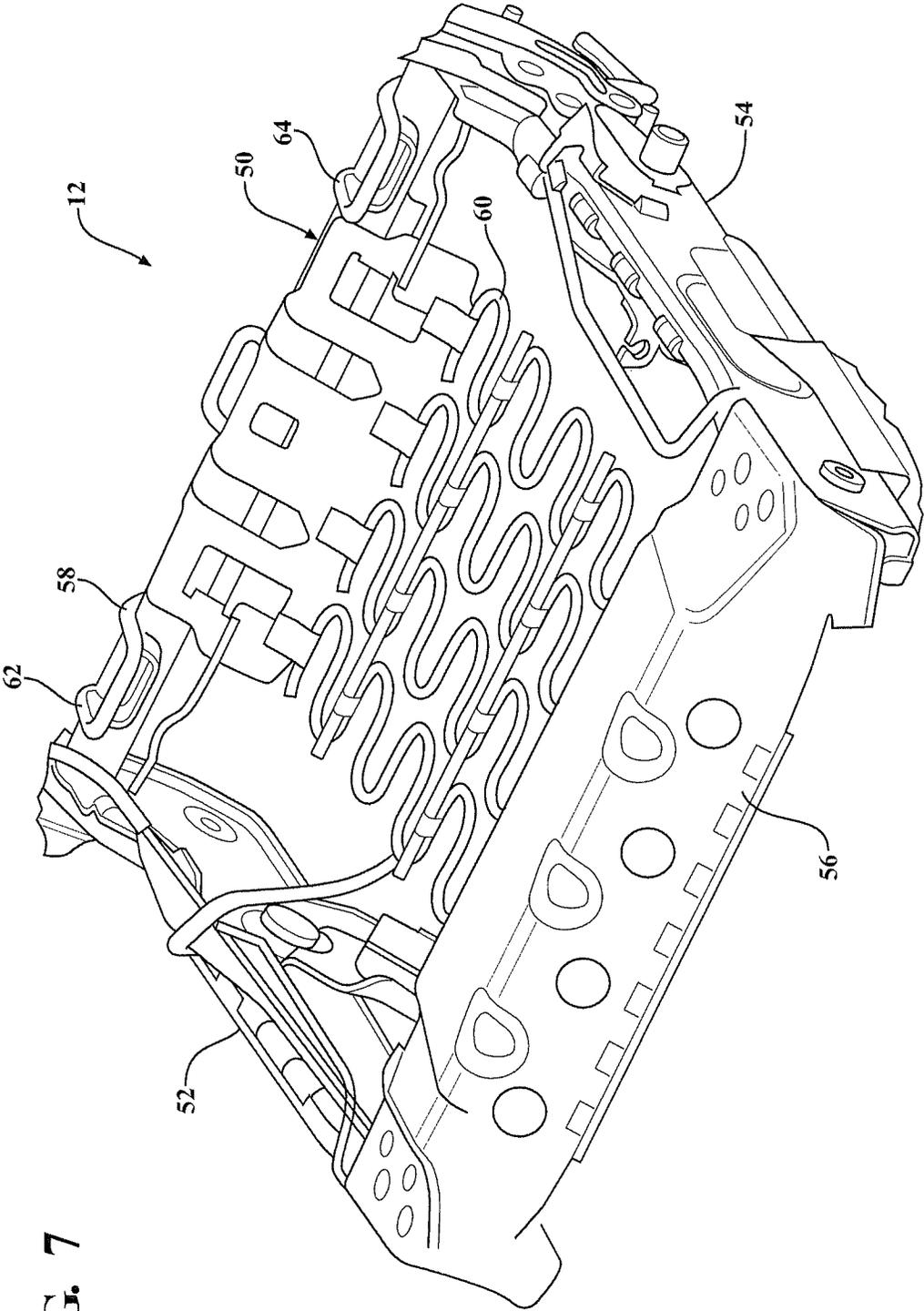


FIG. 7

FIG. 9A

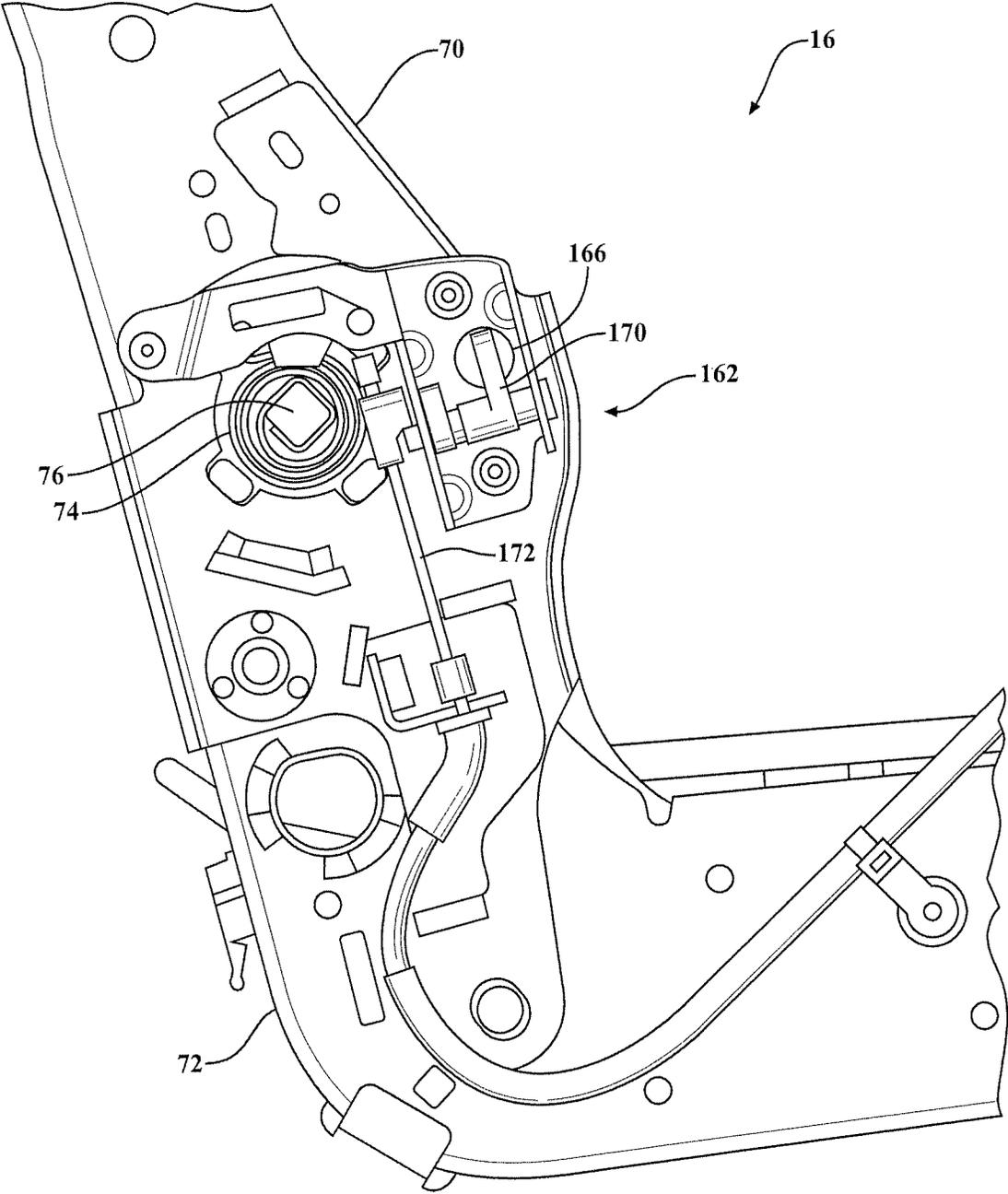
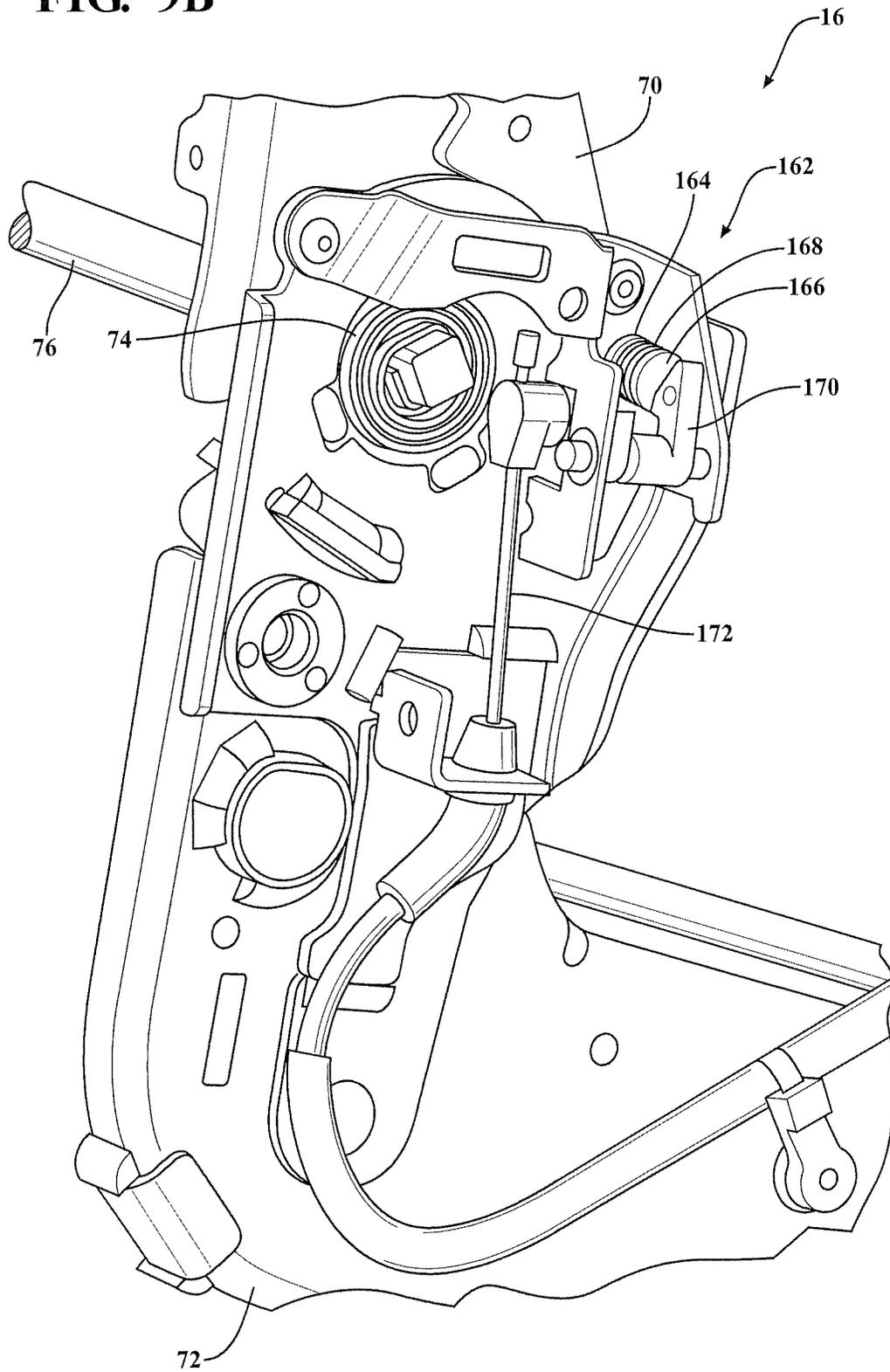


FIG. 9B



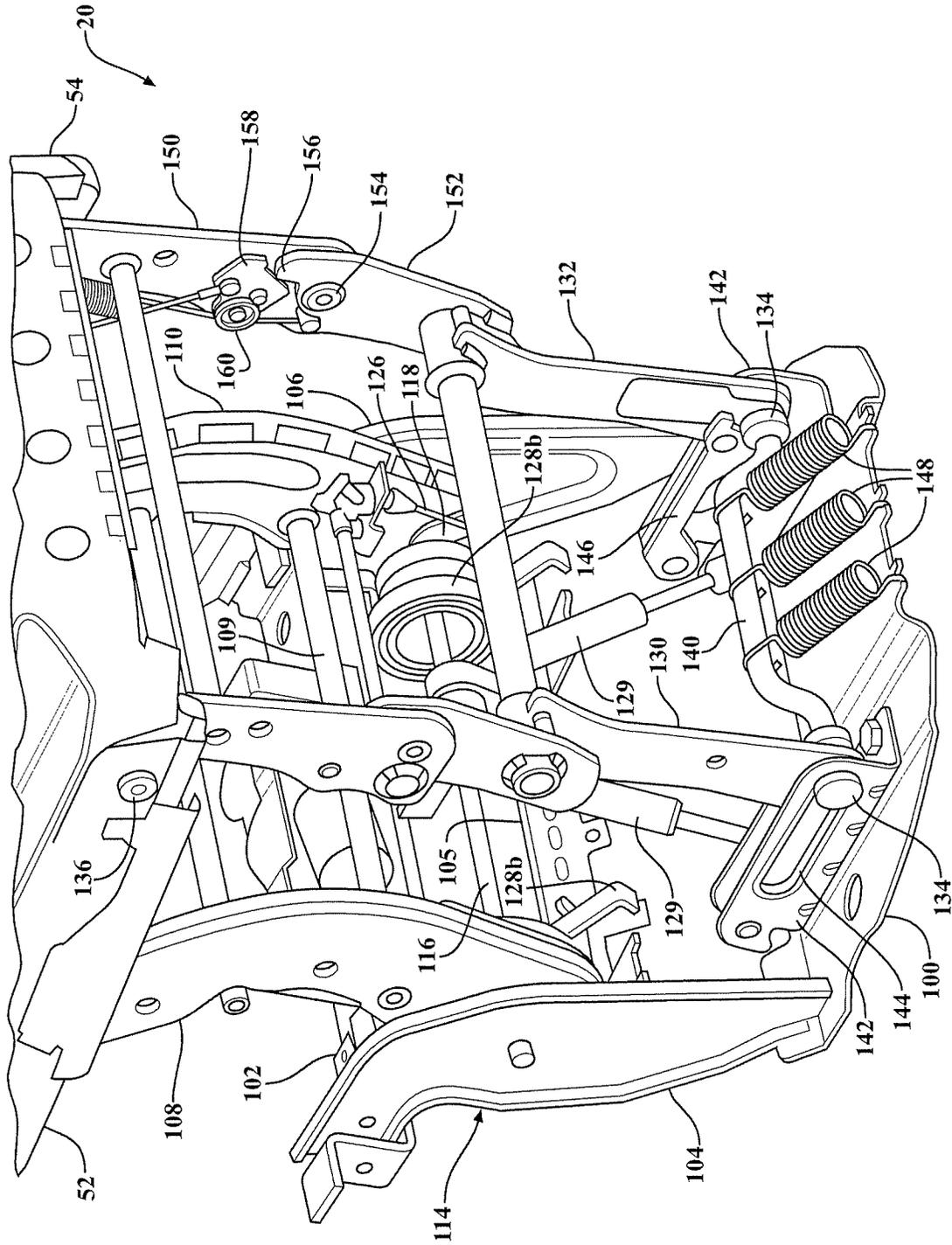


FIG. 10

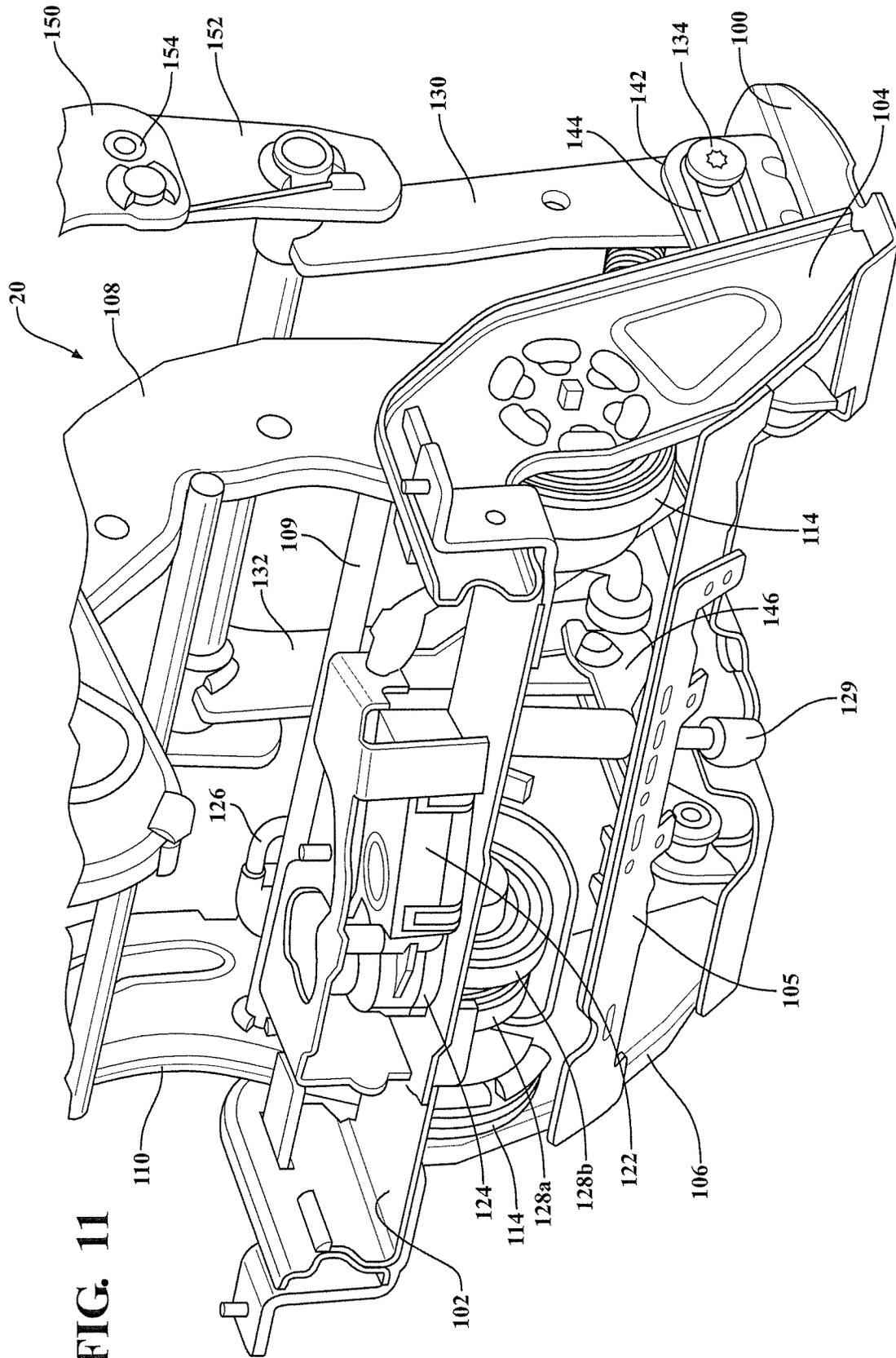
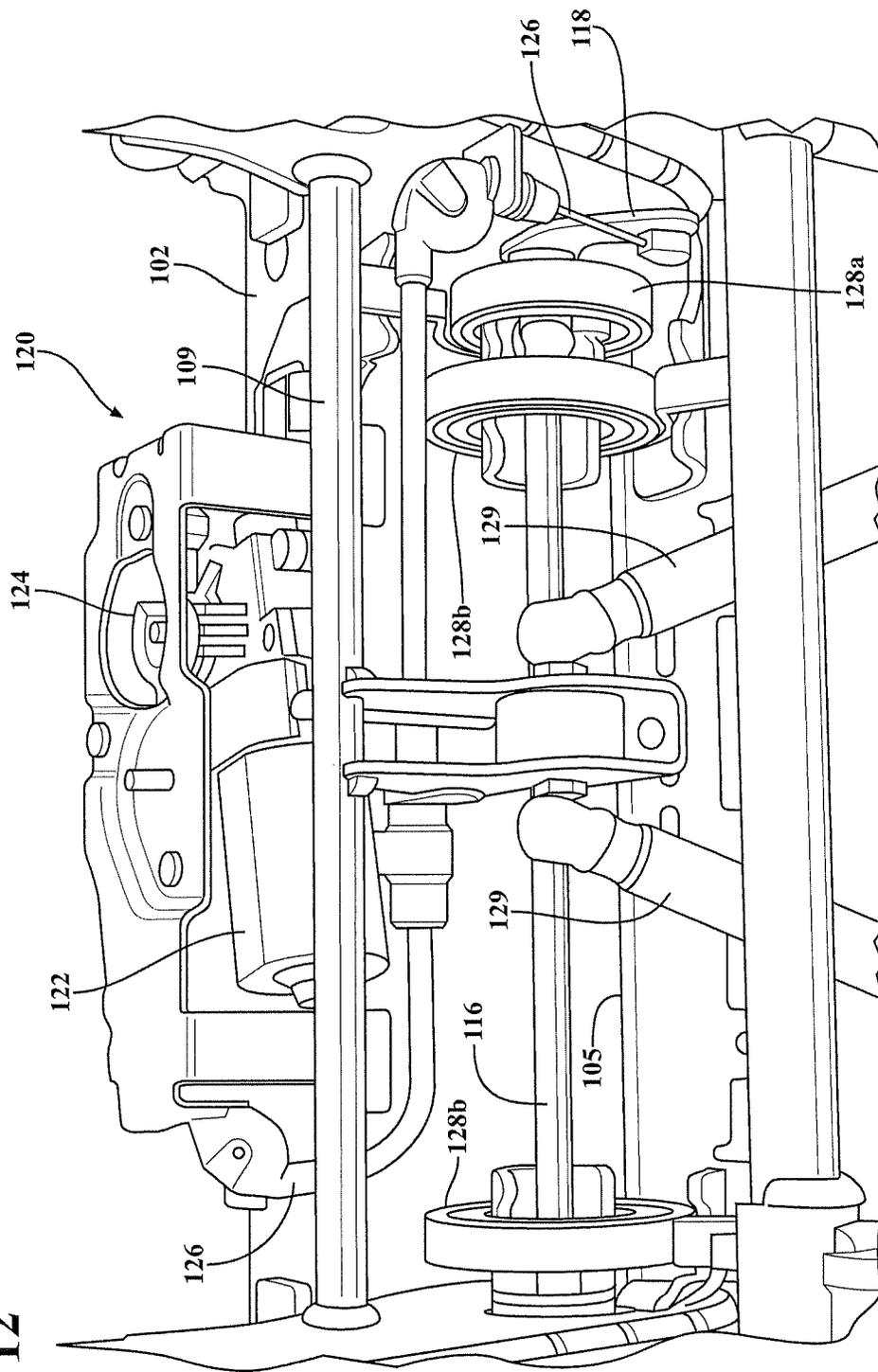


FIG. 11

FIG. 12



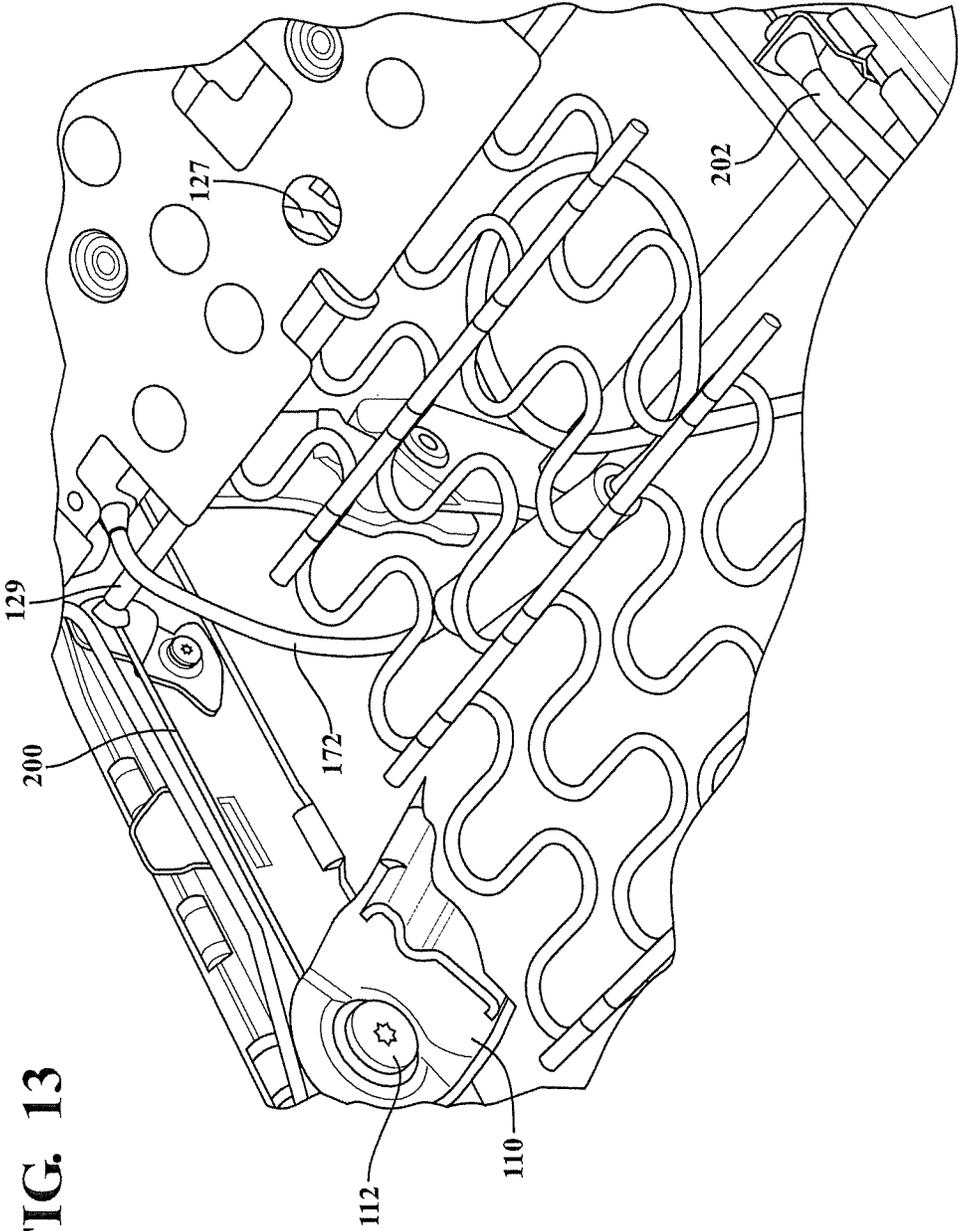


FIG. 13

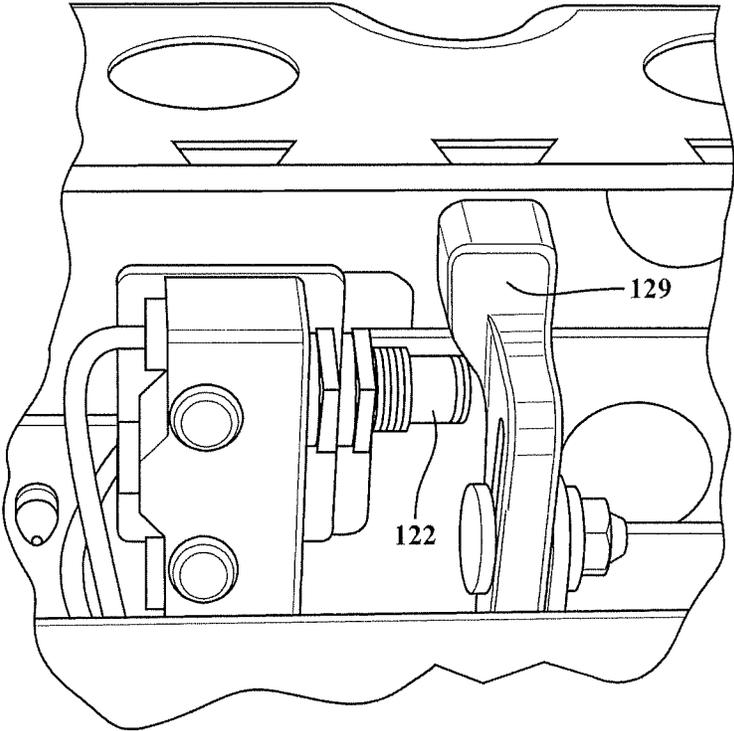


FIG. 14

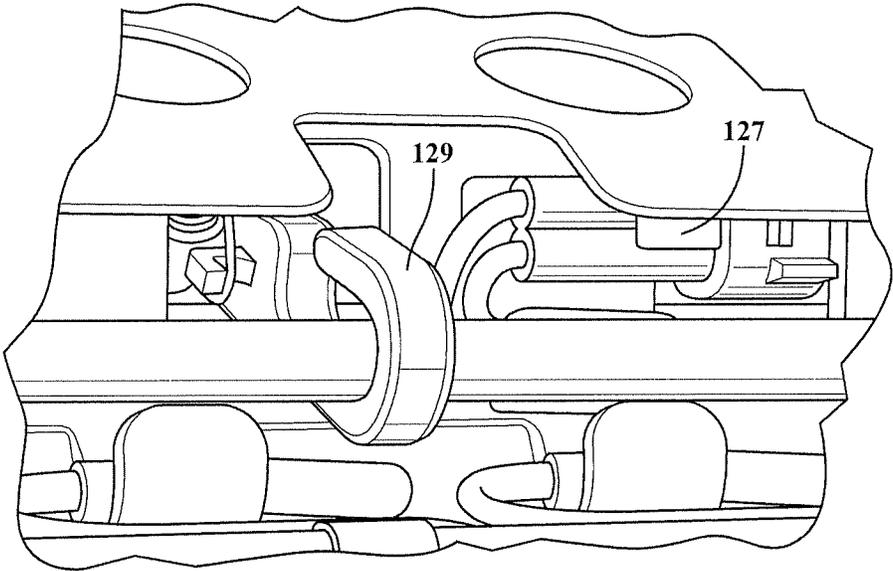


FIG. 15

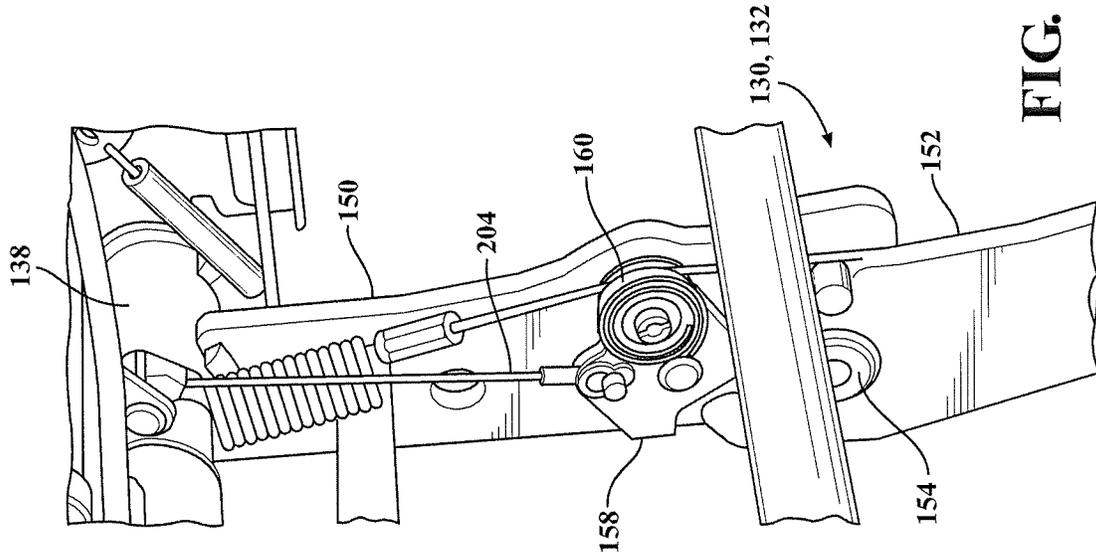


FIG. 17

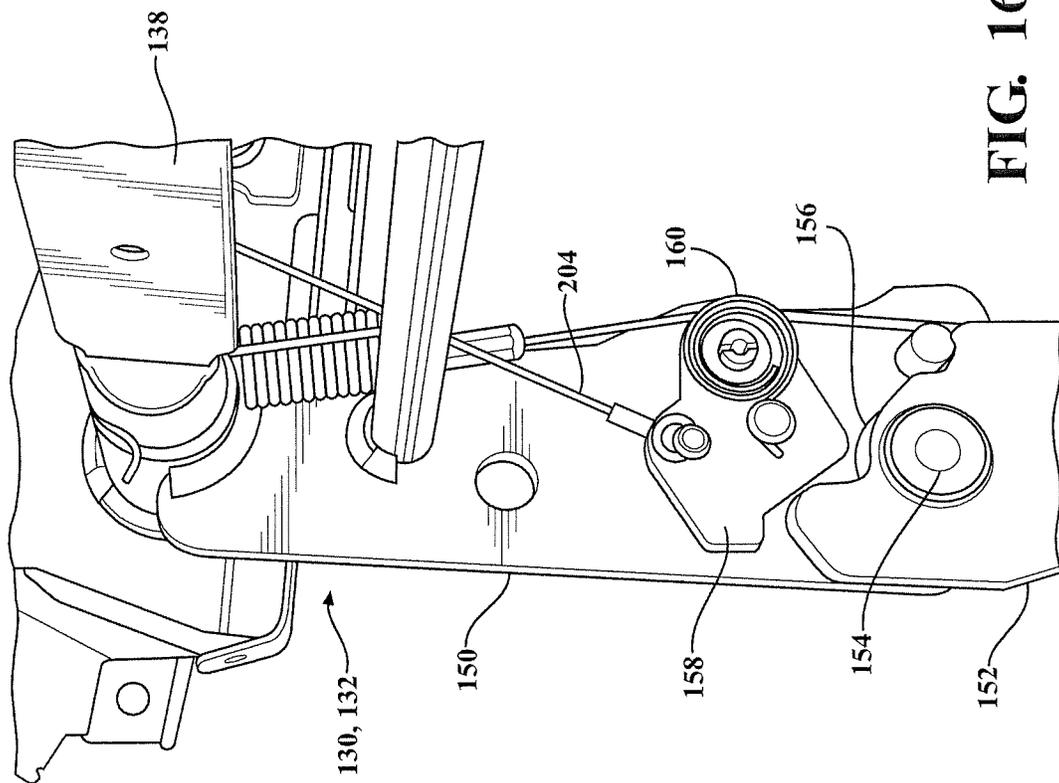


FIG. 16

FIG. 19

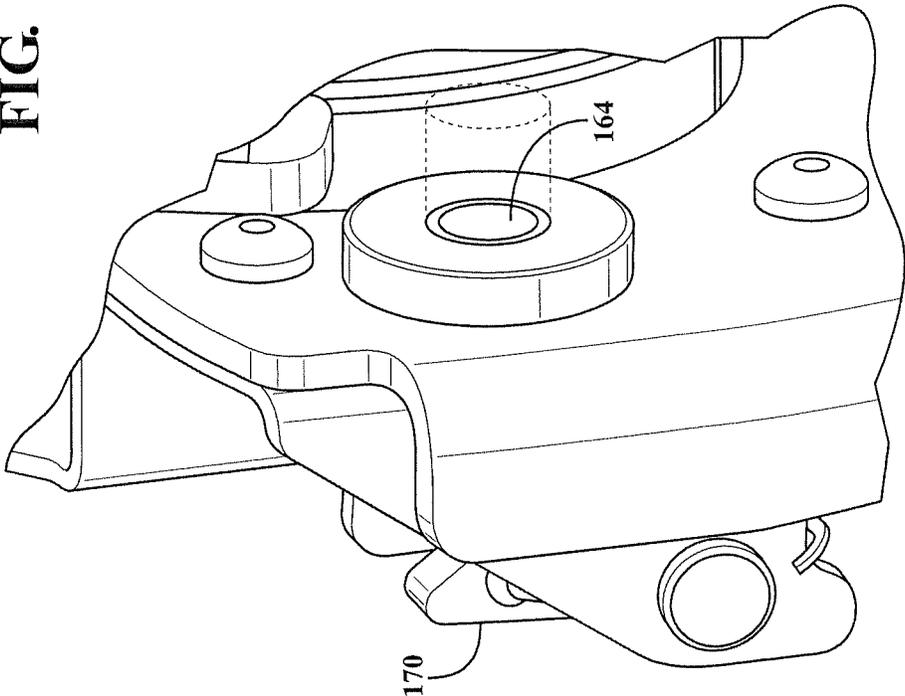
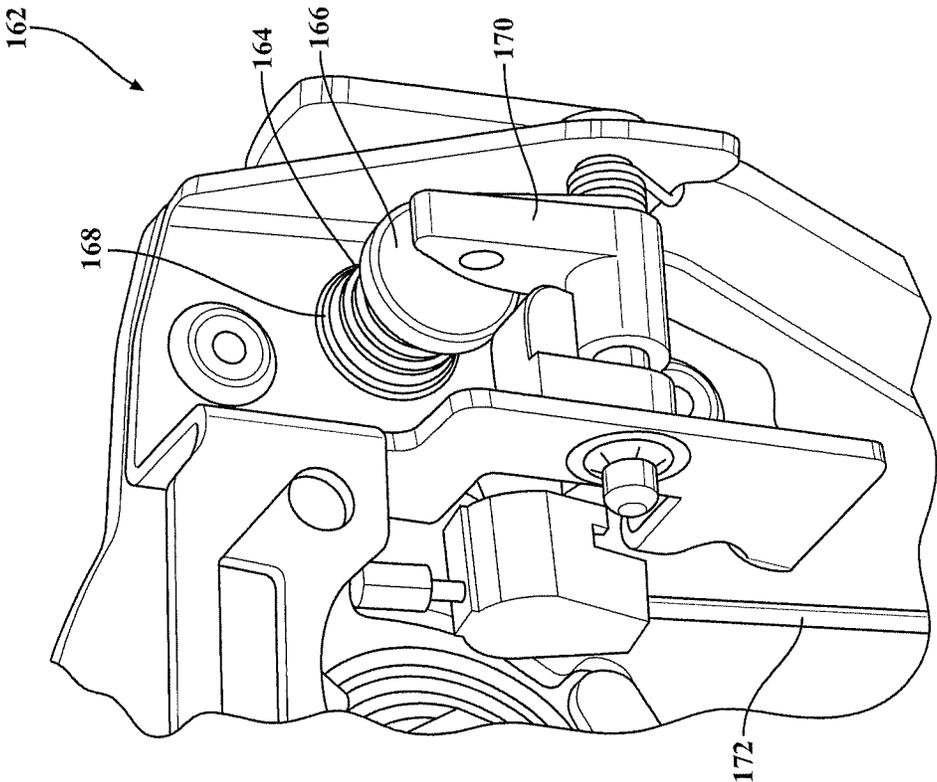


FIG. 18



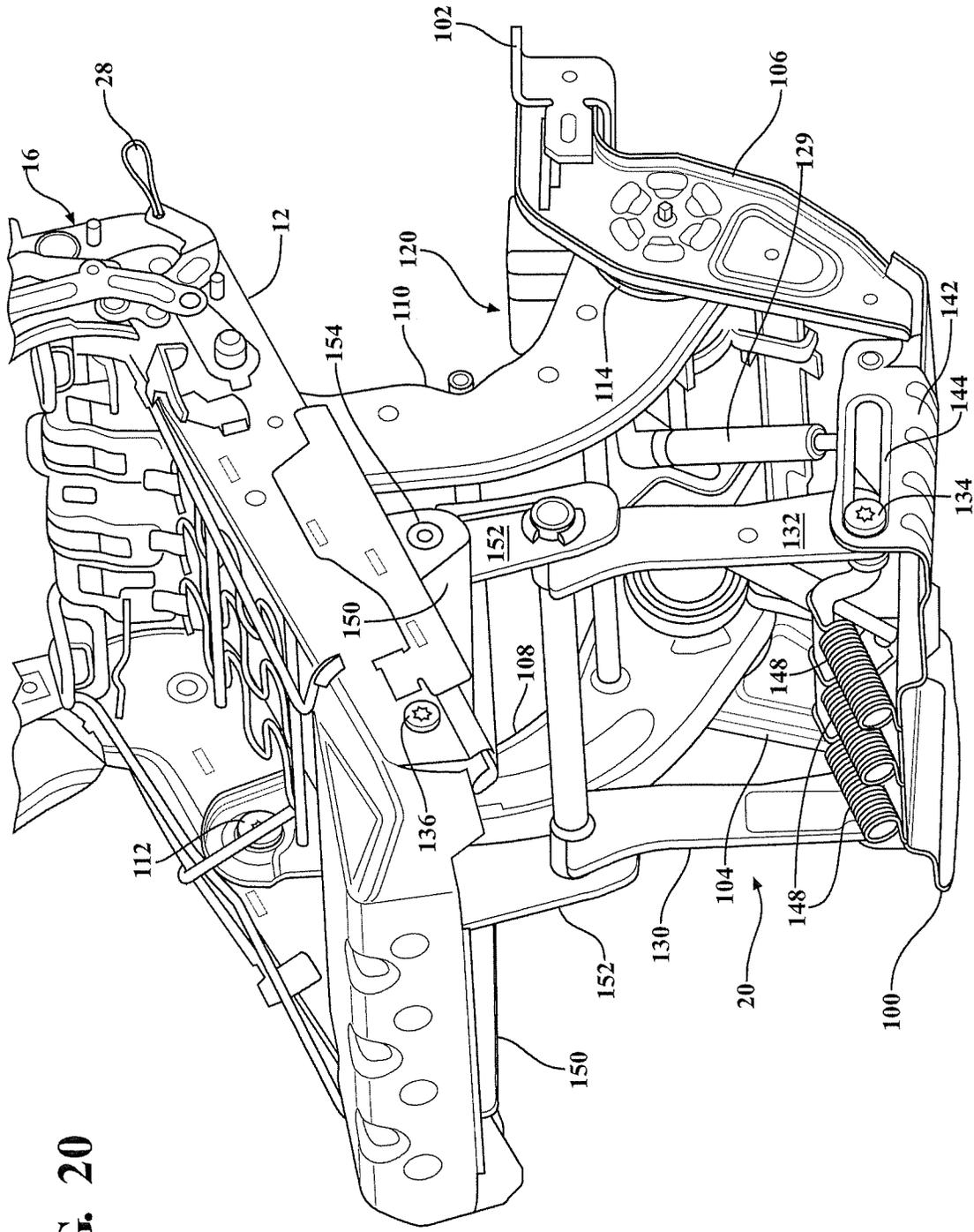


FIG. 20

STOW-IN-FLOOR SEAT ASSEMBLY WITH PITCHED EASY ENTRY POSITION

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation application of United, States application Ser. No. 15/631,218 filed Jun. 23, 2017 which claims priority to U.S. Provisional Application No. 62/353,593 filed on Jun. 23, 2016.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to a seat assembly for an automotive vehicle, and more particularly, to a stow-in-floor seat assembly operable between a generally upright seating position, a pitched easy entry position tilted forwardly for allowing easier ingress and egress into the rear of the vehicle, and a stowed position recessed within the floor of the automotive vehicle.

2. Description of Related Art

Automotive vehicles include seat assemblies for supporting occupants within the vehicle. The seat assemblies typically include a seat cushion and a seat back operatively coupled to the seat cushion by a recliner mechanism for allowing selective pivotal adjustment of the seat back relative to the seat cushion between a plurality of reclined seating positions. The seat back is also commonly moveable between any one of the reclined seating positions and a generally horizontal fold flat position overlying the seat cushion to present a load floor surface on the rear surface of the seat back.

It is also known in the automotive seating art to mount a riser assembly between the seat cushion and the floor of the vehicle for moving the seat assembly between a seating position, with the seat back in one of the reclined seating positions and the seat cushion spaced above the floor, and a stowed position, with the seat back in the fold flat position and the seat assembly stowed within a recess or bin in the floor of the vehicle. The seat assembly typically includes a first release mechanism for actuating the recliner mechanism to provide pivotal movement of the seat back between the reclined seating position and the fold flat position and a separate second release mechanism for actuating the riser assembly to provide pivotal movement of the seat assembly between the seating position and the stowed position.

It is desirable to provide a release mechanism operatively coupled to the riser assembly for providing movement of the seat assembly between the seating position or fold flat position and a pitched easy entry position wherein the seat assembly is tilted forwardly and downwardly towards the floor of the vehicle to allow easier ingress and egress into the rear of the vehicle.

SUMMARY OF THE INVENTION

An exemplary embodiment of the disclosure involves a seat comprising a seat assembly and a riser assembly. The seat assembly includes a seat cushion pivotally coupled to a seat back by a recliner assembly. The recliner assembly is selectively operable between a locked condition preventing pivotal movement of the seat back and an unlocked condition allowing pivotal movement of the seat back. The riser

assembly supports the seat assembly above a floor, such as the floor of a vehicle, and is configured for actuation and movement of the seat assembly between a generally upright seating position, a pitched easy entry position tilted forwardly and downwardly towards the floor to allow easier ingress and egress behind the seat, and a stowed position recessed within a compartment below the floor.

In an embodiment, the recliner assembly comprises a locking mechanism, such as a disc recliner, which is operatively coupled to a cam lever. The first end of the cam lever is operatively coupled to at least one recline link. The at least one recline link is in turn operatively coupled to a recline handle for operation by the user. Operation of the recline handle thereby moves the at least one recline link, which in turn rotates the cam lever and unlocks the locking mechanism, so as to permit the recliner assembly to enter the unlocked condition. In the unlocked condition, the seat back may be pivoted between at least two of an upright seating position, a reclined seating position, and a fold flat position.

In an embodiment, the second end of the cam lever is operatively coupled to at least one further recline link. The at least one further recline link is in turn operatively coupled to a recliner strap for operation by the user. Pulling the recliner strap thereby moves the at least one further recline link, which in turn rotates the cam lever and unlocks the locking mechanism, so as to permit the recliner assembly to enter the unlocked condition.

In an embodiment, operation of the recliner strap may also unlock a further locking mechanism on the riser assembly. The further locking mechanism pivotally couples support brackets attached to the floor of the vehicle to a pair of rear legs connecting the riser assembly to the seat assembly. The further locking mechanism is operatively coupled to an electric drive assembly, which moves the further locking mechanism into the unlocked position in response to a proximity switch. The proximity switch is activated by a switch actuator that is operatively coupled (e.g. by a cable, cam, linkage, or otherwise) to the at least one further recline link, which is in turn operatively coupled to the recliner strap. In such embodiments, operation of the recliner strap thereby unlocks the further locking mechanism on the riser assembly, in addition to the locking mechanism on the seat assembly, so as to permit the seat to be moved to a pitched easy entry position in which the seat back is in a fold flat position.

In an embodiment, an easy entry handle is operatively coupled to the seat assembly. The easy entry handle is operatively coupled to the switch actuator (e.g. by a cable, cam, linkage, or otherwise). Operation of the easy entry handle moves the switch actuator, thereby triggering the proximity switch and unlocking the further locking mechanism on the riser assembly. The locking mechanism on the seat assembly remains in its locked condition, allowing the seat to be moved to the pitched easy entry position in which the seat back is in a generally upright position.

In an embodiment, the switch actuator is also operatively coupled (e.g. by a cable, cam, linkage, or otherwise) to at least one biased latch mechanism on the riser assembly. The latch mechanism pivotally couples an upper and lower portion of the front legs of the riser assembly. The latch mechanism is configured to lock the riser assembly in the upright position. In such embodiments, movement of the switch actuator (using the recliner strap or the easy entry handle) also moves the latch mechanism against its bias, thereby allowing the riser assembly to leave the upright position so as to permit the seat to enter the pitched easy entry position or the stowed position (as the case may be).

In an embodiment, the seat assembly further comprises a seat back blocking mechanism. The seat back blocking mechanism comprises a biased pin that enters an aperture on the recliner assembly to block and prevent the seat back from pivoting forward to the fold flat position when the seat assembly is in the pitched easy entry position. The pin is operatively coupled to the riser assembly (e.g. by a cable, cam, linkage, or otherwise) such that the pin moves against the bias and permits movement into the fold flat position when the riser assembly moves beyond the pitched easy entry position, toward the stowed position.

BRIEF DESCRIPTION OF THE DRAWINGS

Advantages of the present disclosure will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

FIG. 1 is a side view of a seat assembly and riser assembly according to an embodiment of the disclosure.

FIG. 2 is a side view of the seat assembly and riser assembly, illustrating a reclined seating position.

FIG. 3 is a side view of the seat assembly and riser assembly, in a fold flat position.

FIG. 4A is a side view of the seat assembly and the riser assembly, in a pitched easy entry position, with the seat back configured in an upright position.

FIG. 4B is a side view of the seat assembly and the riser assembly, in a pitched easy entry position, with the seat configured in a fold flat position.

FIG. 5 is a side view of the seat assembly and the riser assembly, in a stowed position.

FIG. 6 is a perspective view of a seat back frame according to an embodiment of the disclosure.

FIG. 7 is a perspective view of a seat cushion frame according to an embodiment of the disclosure.

FIG. 8 is a fragmentary outboard side view of a recliner assembly according to an embodiment of the disclosure.

FIG. 9A is a fragmentary inboard side view of a recliner assembly according to an embodiment of the disclosure.

FIG. 9B is a fragmentary perspective view of a recliner assembly according to an embodiment of the disclosure.

FIG. 10 is a fragmentary rear perspective view of a riser assembly according to an embodiment of the disclosure, in an upright position.

FIG. 11 is a fragmentary front perspective view of a riser assembly according to an embodiment of the disclosure.

FIG. 12 is an enlarged fragmentary rear view of an electric drive assembly according to an embodiment of the disclosure.

FIG. 13 is an enlarged fragmentary top perspective view of a seat cushion frame and riser assembly according to an embodiment of the disclosure.

FIG. 14 is an enlarged fragmentary view of a riser assembly according to an embodiment of the disclosure.

FIG. 15 is an enlarged fragmentary view of a seat cushion frame according to an embodiment of the disclosure.

FIG. 16 is an enlarged fragmentary front perspective view of a riser assembly according to an embodiment of the disclosure.

FIG. 17 is an enlarged fragmentary rear perspective view of a riser assembly according to an embodiment of the disclosure.

FIG. 18 is an enlarged fragmentary inboard perspective view of a seat back blocking mechanism according to an embodiment of the invention.

FIG. 19 is an enlarged fragmentary outboard perspective view of a seat back blocking mechanism according to an embodiment of the invention.

FIG. 20 is a fragmentary front perspective view of the seat assembly and riser assembly, in a pitched easy entry position, according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Referring to the Figures, wherein like numerals indicate like or corresponding parts throughout the several views, a seat assembly according to one embodiment of the invention for use in an automotive vehicle is generally shown at 10. Referring to FIG. 1, the seat assembly 10 includes a generally horizontal seat cushion 12 and a generally upright seat back 14 pivotally coupled to the seat cushion 12 by a pair of recliner assemblies 16. The recliner assembly 16 is selectively operable between a locked condition preventing pivotal movement of the seat back 14 and an unlocked condition allowing pivotal movement of the seat back 14 relative to the seat cushion 12 between an upright seating position (shown in FIG. 1), a plurality of reclined seating positions (shown in FIG. 2), and a forwardly pivoted fold flat position overlying the seat cushion 12 (shown in FIG. 3). The recliner assembly 16 may be any suitable recliner assembly that is well known in the art, such as a disc-type recliner. The seat assembly 10 is operatively coupled to and supported above a floor 18 in the vehicle by a riser assembly 20. The riser assembly 20 provides for actuation and movement of the seat assembly 10 between one of the seating positions spaced above the floor 18 of the vehicle as shown in FIGS. 1 and 2, a pitched easy entry position tilted forwardly and downwardly towards the floor 18 of the vehicle to allow easier ingress and egress into the rear of the vehicle, as shown in FIGS. 4a and 4b, and a stowed position recessed within a bin 21 or compartment below the floor 18 of the vehicle, as shown in FIG. 5. The seat assembly 10 may also include a pair of armrests 22 pivotally coupled to each opposing side of the seat back 14 for supporting a seat occupant's arm in a comfort position and a head restraint 24 operatively coupled to the top portion of the seat back 14 and adjustable between a stowed position and a use position for supporting the head and neck of the seat occupant as is commonly known in the art.

Referring to FIG. 6, the seat back 14 includes a generally U-shaped seat back frame 30 for supporting a cellular foam pad encased in a trim cover as is commonly known in the art. The seat back frame 30 is defined by spaced apart first and second side members 32, 34 extending vertically between first ends interconnected by a top cross member 36 and opposite distal second ends for connection to the recliner assembly 16. A pair of mid cross members 38, 40 also extend laterally between and interconnect the side members 32, 34. A pair of head restraint tubes 42, 44 may extend through the top cross member 36 for slidably receiving and supporting a pair of guide posts (not shown) of the head restraint 24 as is commonly known in the seating art.

Referring to FIG. 7, the seat cushion 12 similarly includes a seat cushion frame 50 for supporting a cellular foam pad encased in a trim cover. The seat cushion frame 50 is defined by spaced apart first and second side members 52, 54 extending between first ends interconnected by a front cross member 56 and opposite second ends interconnected by a rear cross member 58. A sinusoidal spring suspension mat 60 extends between the front and rear cross members 56, 58 for providing seat occupant comfort and support as is com-

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monly known in the art. The rear cross member **58** may also include a pair of child seat latch wires **62**, **64** extending therefrom for receiving and securing a child seat on the seat cushion **12** as is commonly known in the seating art.

Referring to FIG. **8**, the recliner assembly **16** is shown pivotally coupling the seat back **14** to the seat cushion **12**. A recliner assembly **16** is operatively coupled to each side of the seat assembly **10**. That is, a first recliner assembly **16** is mounted on the inboard side of the seat assembly **10** between the seat back frame **30** and the seat cushion frame **50** and a second recliner assembly **16** is mounted on the outboard side of the seat assembly **10** between the seat back frame **30** and the seat cushion frame **50**. Each recliner assembly **16** includes an upper bracket **70** fixedly mounted to the side member **32**, **34** of the seat back frame **30** and a lower bracket **72** fixedly mounted to the side member **52**, **54** of the seat cushion frame **50**. A first disc recliner **74**, of the type commonly known in the seating art, is operatively coupled between the upper bracket **70** and lower bracket **72**. A cross tube **76** is coupled between the disc recliner **74** on the inboard side of the seat assembly **10** and the disc recliner **74** on the outboard side of the seat assembly **10** for synchronizing actuation of the disc recliners **74** between a locked condition preventing pivotal movement of the seat back **14** relative to the seat cushion **12** and an unlocked condition allowing pivotal movement of the seat back **14** between the seating position, a reclined position and the fold flat position. A recline release mechanism **78** is operatively coupled to one of the disc recliners **74** for simultaneously actuating both of the disc recliners **74** between the locked and unlocked conditions. More specifically, the recline release mechanism **78** includes a cam lever **80** fixedly secured to and extending from one of the disc recliners **74**, the cam lever **80** having a first lever end **82** and an opposite second lever end **84**. A first recline link **86** extends between a first end defined by an elongated slot **88** and an opposite second end defined by a pivot pin **90**. A guide pin **92** extends from the first lever end **82** and is slidably received in the slot **88** of the first recline link **86**. A second recline link **94** includes a first end pivotally connected to the side member **54** of the seat cushion frame **50** by a pivot post **96** and an opposite distal end pivotally connected to the first recline link **86** by pivot pin **90**. A recliner handle (shown at **26** in FIG. **1**) is secured to the pivot post **96** for pivoting the second recline link **94** and actuating the disc recliner **74** between the locked and unlocked condition. In operation, actuation of the recliner handle **26** pivots the second recline link **94** about pivot post **96** in the clockwise direction, as shown in FIG. **8**, pulling downwardly on the first recline link **86**. The first recline link **86** pulls on the guide pin **92** to pivot the cam lever **80** in the counterclockwise direction, thereby releasing the disc recliner **74** to the unlocked condition and allowing pivotal movement of the seat back **14** relative to the seat cushion **12**.

The recliner assembly **16** may also be actuated between the locked and unlocked conditions by a rear recliner strap **28**. The rear recliner strap **28** is connected to a third recline link **87** which is pivotally coupled to the lower bracket **72** by pivot post **97** arranged between a first end connected to the recliner strap **28** and an opposite second end defined by pivot pin **91**. A fourth recline link **95** extends between a first end pivotally coupled to the third recline link **87** by pivot pin **91** and an opposite second end having an elongated slot **89** therein for slidably receiving a second guide pin **93** extending from the second lever end **84** of the cam lever **80**. In operation, as the rear recliner strap **28** is pulled rearwardly, the third recline link **87** pivots in the counterclockwise

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direction pushing upwardly on the fourth recline link **95**. The fourth recline link **95** rotates the cam lever **80** in the counterclockwise direction, thereby releasing the disc recliner **74** from the locked to unlocked condition allowing pivotal movement of the seat back **14** from one of the reclined seating positions to the fold flat position.

Referring to FIGS. **10** and **11**, the riser assembly **20** is shown including a front mounting plate **100** and a rear mounting plate **102** for fixedly mounting and securing the seat assembly **10** to the floor **18** of the vehicle. A pair of laterally spaced apart side support brackets **104**, **106** are fixedly secured and extend between the front mounting plate **100** and rear mounting plate **102**. A support bracket cross-member **105** extends laterally between and is fixedly secured to side support brackets **104**, **106**. A pair of rear legs **108**, **110** extend between a first end pivotally coupled to the seat cushion side members **52**, **54** by pivot posts **112** and a second end pivotally coupled to the side support brackets **104**, **106** by a second disc recliner **114** separately operable between a locked and unlocked condition for allowing pivotal movement of the rear legs **108**, **110** about the side support brackets **104**, **106**. A rear leg crossmember **109** extends laterally between and is fixedly secured to rear legs **108**, **110**. The second disc recliners **114** are interconnected by a second cross tube **116** for simultaneously actuating each of the second disc recliners **114** between the locked and unlocked conditions. A second cam lever **118** is operatively coupled to one of the second disc recliners **114** for actuating the second disc recliners **114** between a locked condition locking the rear legs **108**, **110** in the upright position shown in FIG. **10** and an unlocked condition allowing the rear legs **108**, **110** to pivot relative to the side support brackets **104**, **106** for moving the seat **10** between the upright seating position, pitched easy entry position, and stowed position as will be described further hereinbelow.

Referring to FIGS. **11** and **12**, an electric drive assembly **120** is coupled to the second cam lever **118** for actuating the second disc recliners **114** between the locked and unlocked conditions. The electric drive assembly **120** comprises an electric motor **122** coupled to a cable drum **124** for rotatably driving the cable drum **124** and pulling cable **126** connected to the second cam lever **118**, thereby actuating the second disc recliners **114** between the locked and unlocked conditions in response to actuation of the electric drive assembly **120**.

Referring to FIGS. **13-15**, a proximity switch **127** is fixedly secured to the bottom of the front cross member **56** of the seat cushion frame **50** for actuating the electric drive assembly **120**. A switch actuator **129** is pivotally coupled between the side members **52**, **54** for selectively engaging and actuating the proximity switch **127** to power the electric drive assembly **120** and actuate the second disc recliners **114** between the locked and unlocked conditions as will be described in greater detail herein below. Referring to FIGS. **10** and **12**, a coil spring **128a** is connected between at least one of the rear legs **108**, **110** and the rear mounting plate **102** for biasing the rear legs **108**, **110** to pivot forwardly and downwardly when the second disc recliners **114** are actuated to the unlocked condition. A pair of coil springs **128b** are connected between the rear legs **108**, **110** and the support bracket crossmember **105** for biasing the rear legs **108**, **110** to pivot rearwardly and upwardly when the seat assembly **10** is moved from the stowed position to the upright seating position. A pair of pneumatic or hydraulic linear bias members **129** extend between one end coupled to the front mounting plate **100** and an opposite second end coupled to a bracket extending from the rear leg crossmember **109** for

biasing the rear legs **108**, **110** to pivot rearwardly and upwardly when the seat assembly **10** is moved from either the stowed position or pitched easy entry position to the upright seating position.

Referring again to FIG. **10**, the riser assembly **20** also includes a pair of spaced apart front legs **130**, **132** extending between a first end pivotally and slidably coupled to the front mounting plate **100** by lower pivot posts **134** and an opposite second end pivotally coupled to the side members **52**, **54** of the seat cushion frame **50** by upper pivot posts **136**. An upper cross tube **138** extends between the upper pivot posts **136** and is fixedly connected to the front legs **130**, **132** to rotate with the front legs **130**, **132**. A lower cross tube **140** extends between the lower pivot posts **134** and also rotates with the posts **134** and front legs **130**, **132**. The front mounting plate **100** includes a pair of slide brackets **142** extending upwardly therefrom for receiving the lower pivot posts **134**. Each slide bracket **142** includes an elongated slot **144** for slidably receiving and guiding the lower pivot posts **134** between a fore end and an aft end. A blocking arm **146** is pivotally connected to the slide bracket **142** for engaging the pivot post **134** to maintain the pivot post **134** in the fore end of the slot **144** with the seat assembly **10** in the upright seating position and release the pivot posts **134** to slide along the slot **144** to the aft end upon pivotal movement of the seat assembly **10** to the stowed position. A plurality of coil springs **148** extend between the lower cross tube **140** and the front bracket **100** for biasing the pivot posts **134** to the fore end of the slide brackets **142**.

Referring to FIGS. **10**, **16** and **17**, the front legs **130**, **132** comprise an upper leg portion **150** extending from the upper pivot posts **136** to an opposite distal end and a lower leg portion **152** extending from the lower pivot posts **134** to an opposite distal end. The respective distal ends of the upper and lower leg portions **150**, **152** are pivotally interconnected by a pivot pin **154**. The distal end of each lower leg portion **152** further includes a notch **156** formed therein. A latch arm **158** is pivotally coupled to the distal end of each upper leg portion **150** for locking engagement with the notch **156** between a latched position interlocking the upper and lower leg portions **150**, **152** to prevent pivotal movement therebetween and an unlatched position decoupling and allowing pivotal movement of the upper leg portion **150** relative to the lower leg portion **152**. A clock spring **160** is coupled to the latch arm **158** to bias the latch arm **158** to the latched position.

Referring to FIGS. **9a**, **9b**, **18** and **19**, the seat assembly **10** further includes a seat back blocking mechanism **162** for blocking and preventing the seat back **14** from pivoting to the fold flat position when the seat assembly **10** is in the pitched easy entry position. Specifically, a retractable pin **164** is slidably coupled through an aperture in the lower bracket **72** of the recliner assembly **16**. The pin **164** has a head **166** and a coil spring **168** seated around the pin **164** and compressed between the head **166** and the lower bracket **72** for biasing the pin **164** to a retracted position. A cam **170** is pivotally supported by the lower bracket **72** and engages with the head **166** of the pin **164** for actuating the pin **164** between the retracted position and an extended position pressed through the aperture in the lower bracket **72**. A cable **172** extends between the upper cross tube **138** on the front legs **130**, **132** and the cam **170** wherein the cable **172** is pulled in tension in response to rotation of the upper cross tube **138** with the pivoting movement of the front legs **130**, **132** to the pitched easy entry position to pivot the cam **170** against the pin head **166**, compressing the coil spring **168**, and forcing the pin **164** to the extended position. In the

extended position, the pin **164** is engaged by the upper bracket **70** of the recliner assembly **16** to block the seat back **14** from pivoting from the upright position to the fold flat position while the seat assembly **10** is in the pitched easy entry position.

In operation, the seat assembly **10** is selectively movable between the plurality of seating positions, fold flat position, pitched easy entry position or stowed position. First, referring to FIGS. **1**, **3** and **8**, the seat back **14** may be pivoted between one of the upright or reclined seating positions to the fold flat position by actuation of the recliner assembly **16**. Specifically, actuation of the recliner handle **26** pivots the second recline link **94** about pivot post **96** in the clockwise direction, as shown in FIG. **8**, pulling downwardly on the first recline link **86**. The first recline link **86** pulls on the guide pin **92** to pivot the cam lever **80** in the counterclockwise direction and thereby releasing the disc recliner **74** to the unlocked condition and allowing pivotal movement of the seat back **14** relative to the seat cushion **12**.

Alternatively, the seat assembly **10** is selectively movable between the seating position and the stowed position shown in FIG. **5** by actuating the rear stow strap **28**. Referring again to FIG. **8**, the stow recliner strap **28** is connected to the third recline link **87** pivotally coupled to the lower bracket **72**. As the stow recliner strap **28** is pulled rearwardly, the third recline link **87** pivots in the counterclockwise direction pushing upwardly on the fourth recline link **95**. The fourth recline link **95** rotates the cam lever **80** in the counterclockwise direction, thereby releasing the first disc recliner **74** to the unlocked condition and allowing pivotal movement of the seat back **14** to the fold flat position overlying the seat cushion **12**. A cable **200** extends between third recline link **87** and the switch actuator **129** whereby pivotal movement of the third recline link **87** pulls on the cable **200** to pivot the switch actuator **129** into contact with the proximity switch **127**. The contact and actuation of the proximity switch **127** actuates the electric motor **122** to drive the cable drum **124** and pull on the cable **126** to actuate the second disc recliners **114** to the unlocked condition. The coil spring **128a** assists in pivoting the rear legs **108**, **110** forwardly and downwardly moving the seat assembly **10** towards the bin **21**. As the front legs **130**, **132** pivot forwardly and downwardly, a protrusion on the lower leg portion **152** engages the blocking arms **146** to pivot and lift the blocking arms **146** upwardly and disengages them from the lower pivot posts **134** to allow the lower pivot posts to slide along the elongated slot **144** in the slide brackets **142** from the fore end to the aft end. This rearward translation of the front legs **130**, **132** drops the seat assembly **10** downwardly while the rear legs **108**, **110** pivot forwardly collapsing the seat assembly **10** into the bin **21** in the stowed position as shown in FIG. **5**.

Finally, the seat assembly **10** is also selectively moveable between the seating position and the pitched easy entry position shown in FIGS. **4a** and **4b** by actuating an easy entry handle **31** operatively coupled to the upper portion of the seat back **14** as shown in FIG. **1**. A cable **202** extends from the easy entry handle **31** to the switch actuator **129** whereby actuation of the handle **31** pulls on the cable **202** to pivot the switch actuator **129** into contact with the proximity switch **127**. The contact and actuation of the proximity switch **127** actuates the electric motor **122** to drive the cable drum **124** and pull on the cable **126** to actuate the second disc recliners **114** to the unlocked condition. The coil spring **128a** assists in pivoting the rear legs **108**, **110** forwardly and downwardly moving the seat assembly **10** towards the bin **21**. Cables **204** extend between the switch actuator **129** and the latch arms **158** on each leg **130**, **132** whereby actuation

and pivotal movement of the switch actuator 129 pulls on cables 204 and simultaneously pivots the latch arms 158 out of the notches 156 in the lower leg portion 152. With the latch arms 158 disengaged from the notches 156, the upper leg portions 150 are allowed to rotate about pivot pin 154 forwardly and downwardly relative to the lower leg portion 152 to tilt the seat assembly 10 downwardly to the pitched easy entry position as shown in FIG. 20. The lower leg portions 152 are prevented from rotating downwardly by interfacing with a vehicle load floor lid 21a for the bin 21. Further, as previously discussed, cable 172 extends between the upper cross tube 138 on the front legs 130, 132 and the cam 170 wherein the cable 172 is pulled in tension in response to rotation of the upper cross tube 138 with the pivoting movement of the upper leg portions 150 to the pitched easy entry position to pivot the cam 170 against the pin head 166, compressing the coil spring 168, and forcing the pin 164 to the extended position. In the extended position, the pin 164 is engaged by the upper bracket 70 of the recliner assembly 16 to block the seat back 14 from pivoting from the upright position to the fold flat position while the seat assembly 10 is in the pitched easy entry position. However it is possible to rotate the seat back 14 to the fold flat position first, and then put the seat in the pitched easy entry position via actuation of handle 31, as shown in FIG. 4b.

The invention has been described in an illustrative manner, and it is to be understood that the terminology, which has been used, is intended to be in the nature of words of description rather than of limitation. Many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced other than as specifically described.

The invention claimed is:

1. A seat assembly comprising:

a seat cushion;

a seat back;

a recliner assembly pivotally coupling the seat cushion to the seat back, the recliner assembly including a first recliner selectively operable between a locked condition preventing pivotal movement of the seat back and an unlocked condition allowing pivotal movement of the seat back between a generally upright seating position and a fold flat position overlying the seat cushion;

a riser assembly for supporting the seat assembly above a floor, the riser assembly including a support base adapted to mount the seat assembly to the floor, a pair of legs extending between the support base and the seat cushion, and a second recliner pivotally coupling the legs to the support base and selectively operable between a locked condition preventing pivotal movement of the legs and an unlocked condition allowing pivotal movement of the legs for actuation and movement of the seat assembly between a generally upright seating position, a pitched easy entry position tilted forwardly and downwardly towards the floor to allow easier ingress and egress behind the seat, and a stowed position recessed within a compartment below the floor; and

a recliner release mechanism operatively coupled to the first recliner and the second recliner for selectively actuating each of the first recliner and second recliner between the respective locked and unlocked conditions, wherein the recliner release mechanism comprises a cam lever fixedly coupled to the first recliner for

actuating the first recliner between the locked and unlocked conditions, the cam lever extending between a first end and an opposite second end;

a first recline link extending between a first end pivotally coupled to the first end of the cam lever and an opposite second end;

a second recline link extending between a first end pivotally coupled to the seat cushion and an opposite second end pivotally coupled to the second end of the first recline link;

a first recliner handle coupled to the first end of the second recline link wherein operation of the first recliner handle pivots the second recline link to pull linearly on the first recline link pivoting the cam lever to thereby actuate the first recliner between the locked and unlocked conditions;

a third recline link pivotally coupled to seat cushion and extending between a first end and an opposite second end;

a fourth recline link extending between a first end pivotally coupled to the first end of the third recline link and an opposite second end pivotally coupled to the second end of the cam lever; and

a second recliner handle coupled to the second end of the third recline link wherein operation of the second recliner handle pivots the third recline link to pull linearly on the fourth recline link pivoting the cam lever to thereby actuate the first recliner between the locked and unlocked conditions.

2. The seat assembly as set forth in claim 1 wherein the seat cushion extends between a front end and an opposite rear end, the seat back extends between a top end and an opposite bottom side pivotally coupled to the rear end of the seat cushion by the recliner assembly, and wherein said pair of legs includes a pair of laterally spaced apart front legs extending between the support base and the front end of the seat cushion and a pair of laterally spaced apart rear legs extending between the support base and the rear end of the seat cushion.

3. The seat assembly as set forth in claim 2 wherein the second recliner is operatively coupled between each of said rear legs and said support base.

4. The seat assembly as set forth in claim 3, wherein operation of the second recliner handle actuates the second recliner coupled to the riser assembly between the locked and unlocked conditions for movement of the seat assembly to the stowed position.

5. The seat assembly as set forth in claim 4 further including a third recliner handle operatively coupled to the second recliner wherein operation of the third recliner handle actuates only the second recliner between the locked and unlocked condition for movement of the seat assembly to the pitched easy entry position.

6. The seat assembly as set forth in claim 5 further including a seat back blocking mechanism actuated in response to operation of the third recliner handle to block pivotal movement of the seat back when the seat assembly is in the pitched easy entry position.

7. The seat assembly as set forth in claim 6 further including an electric drive assembly operatively coupled between the second and third recliner handles and the second recliner for automatically actuating the second recliner from the locked to unlocked conditions in response to actuation of either the second or third recliner handles.

8. The seat assembly as set forth in claim 7 wherein the electric drive assembly includes an electric motor for driving a cable drum and a cable extending between the cable drum

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and the second recliner for actuating the second recliner between the locked and unlocked conditions in response to actuation of the electric motor.

9. The seat assembly as set forth in claim 8 further including a proximity switch coupled to the electric motor and a switch actuator operatively coupled between each of the second and third recliner handles and the proximity switch for engaging the proximity switch and actuating the electric motor in response to operation of either of the second or third recliner handles.

10. The seat assembly as set forth in claim 9 wherein the pair of front legs include an upper leg portion pivotally coupled to a lower leg portion and a latch operatively coupled between the upper and lower leg portions for movement between a latched position interlocking the upper and lower leg portions and an unlatched position allowing pivotal movement of the upper leg portion relative to the lower leg portion.

11. The seat assembly as set forth in claim 10 further including a cable extending between the switch actuator and

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the latch for actuating the latch between the latched and unlatched positions in response to operation of the third recliner handle thereby allowing pivotal movement of the upper leg portion relative to the lower leg portion with the seat assembly in the pitched easy entry position.

12. The seat assembly as set forth in claim 11 wherein the support base includes a front mounting plate spaced apart from a rear mounting plate and a pair of parallel and spaced apart side support brackets extending between the front and rear mounting plates.

13. The seat assembly as set forth in claim 11 wherein the front mounting plate includes laterally spaced apart slide brackets including an elongated slot therein and wherein said front legs are pivotally and slidably coupled in the elongated slot to allow the front legs to retract rearwardly towards the rear legs during movement of the seat assembly to the stowed position.

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